

H10980

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. RA-20-02-01

Registry No. H10980

LOCALITY

State Alaska

General Locality Shelikof Strait

Sublocality Cape Aklek to Cape Unalishagvak

2001

CHIEF OF PARTY

Captain James C. Gardner, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		REGISTER NO. H-10980
HYDROGRAPHIC TITLE SHEET				
INSTRUCTIONS The hydrographic sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the office.				FIELD NO. RA-20-02-01
State <u>Alaska</u>				
General Locality <u>Shelikof Strait</u>				
Sublocality <u>Cape Aklek to Cape Unalishagvak</u>				
Scale <u>1:20,000</u> Date of Survey <u>5/21/2001 - 7/8/2001</u>				
Instructions Date <u>5/8/01</u> Project No. <u>OPR-P164-RA</u>				
Vessel <u>(2121), (2123), (2124), (2125), (2126), (2127)</u>				
Chief of Party <u>Captain J. C. Gardner, NOAA</u>				
Surveyed by <u>RAINIER Personnel</u>				
Soundings taken by echo sounder, hand lead, pole <u>Knudsen 320M, RESON 8101 MB, Seabeam 1180</u>				
Graphic record scaled by <u>RAINIER Personnel</u>				
Graphic record checked by <u>RAINIER Personnel</u>				
Evaluation by <u>R. Davies</u> Automated plot by <u>HP DesignJet 1050C</u>				
Verification by <u>E. Domingo, R. Davies</u>				
Soundings in <u>Fathoms</u> at <u>MLLW</u>				
REMARKS: <u>Time in UTC. Revisions and annotations appearing as endnotes</u>				
<u>were generated during office processing.</u>				
<u>All depths listed in this report are referenced to</u>				
<u>mean lower low water unless otherwise noted.</u>				

Descriptive Report to Accompany Hydrographic Survey H10980

Project OPR-P164-RA

Shelikof Strait, Alaska

Scale 1:20,000

May-July 2001

NOAA Ship RAINIER

Chief of Party: Captain James C. Gardner, NOAA

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-P164-RA-01 dated May 8, 2001, and the Draft Standing Project Instructions dated April 6, 1998. The purpose of this project is to provide contemporary hydrography with full bottom multibeam coverage in Shelikof Strait, Alaska. The project responds to requests from the Seventeenth U.S. Coast Guard District, the domestic commercial fishing industry, and NOAA.

The survey area is located on the east coast of the Alaska Peninsula in Southern Shelikof Strait, approximately five nautical miles south of Puale Bay, extending south from Cape Aklek to Cape Unalishagvak. This survey corresponds to sheet "D" in the sheet layout provided with the Letter Instructions.

One hundred percent shallow-water multibeam (SWMB) coverage was obtained in the survey area in waters 10 meters and deeper. In waters from 4 meters to 10 meters, SWMB data were obtained at 25-meter line spacing, and in these areas additional coverage was obtained to obtain least depths over features or shoals.¹ Vertical-beam echo sounder (VBES) data were acquired in depths from 4 to 30 meters, at a line spacing of 100 meters, to define the four-meter curve and to aid in the planning of SWMB data acquisition.²

Data acquisition was conducted from May 21 to July 8, 2001 (DN 141 to 189).

B. DATA ACQUISITION AND PROCESSING

A complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods can be found in the *OPR-P164-RA-01 Data Acquisition and Processing Report*, submitted under separate cover. Items specific to this survey and any deviations from the aforementioned report are discussed in the following sections.

B1. Equipment and Vessels

Data were acquired by RAINIER and her survey launches (vessel numbers 2120, 2121, 2122, 2123, 2124, 2125, and 2126). Vessels 2120, 2121, 2123, 2124 and 2126 were used to acquire shallow-water multibeam (SWMB) soundings and sound velocity profiles. Vessels 2122 and 2125 were used to acquire vertical-beam echo soundings (VBES) and detached positions (DPs) for shoreline verification. Vessel 2125 was also used to collect bottom samples. No unusual vessel configurations or problems were encountered during this survey.³

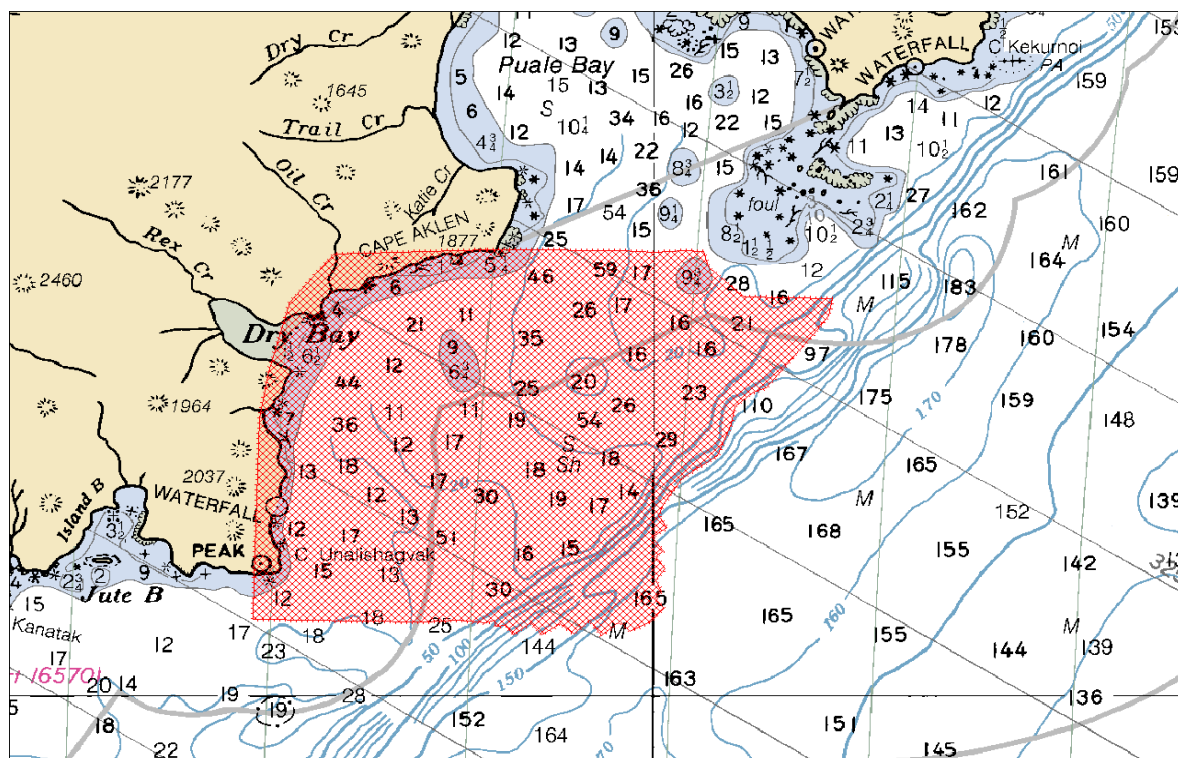


Figure 1. H10980 Survey Limits.

B2. Quality Control

Crosslines

Vertical Beam Echo Sounder (VBES) crosslines totaled 10.74 nautical miles, comprising 11.84% of mainscheme hydrography. Crosslines generally agreed within 1 meter of mainscheme hydrography.⁴

Shallow-Water Multibeam (SWMB) crosslines totaled 67.41 nautical miles, comprising 4.89% of SWMB hydrography. The Quality Control Report (CARIS HIPS) for the checkline file averaged 93.94%, with a depth tolerance factor of 0.013, which conforms to International Hydrographic Organization Order 1 specifications detailed in Special Publication S-44, Edition 4, as well as NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSDM). See Appendix V⁵ for the detailed report.

Junctions⁶

The following contemporary survey junctions with H10980:

Registry #⁷	Scale	Date	Junction side
H10978	1:10,000	2001	Northeast
H10977	1:20,000	2000	North
H11054	1:40,000	2001	South

Survey H10978 junctions well with this survey, with differences generally one fathom or less.⁸

Survey H10977 junctions well with this survey, with differences generally one fathom or less.⁹

At the time of this report, data processing for survey H11054 was not completed. Comparisons of the junction with this survey will be discussed in the Descriptive Report for H11054.¹⁰

Final comparisons will be made at the Pacific Hydrographic Branch (PHB).

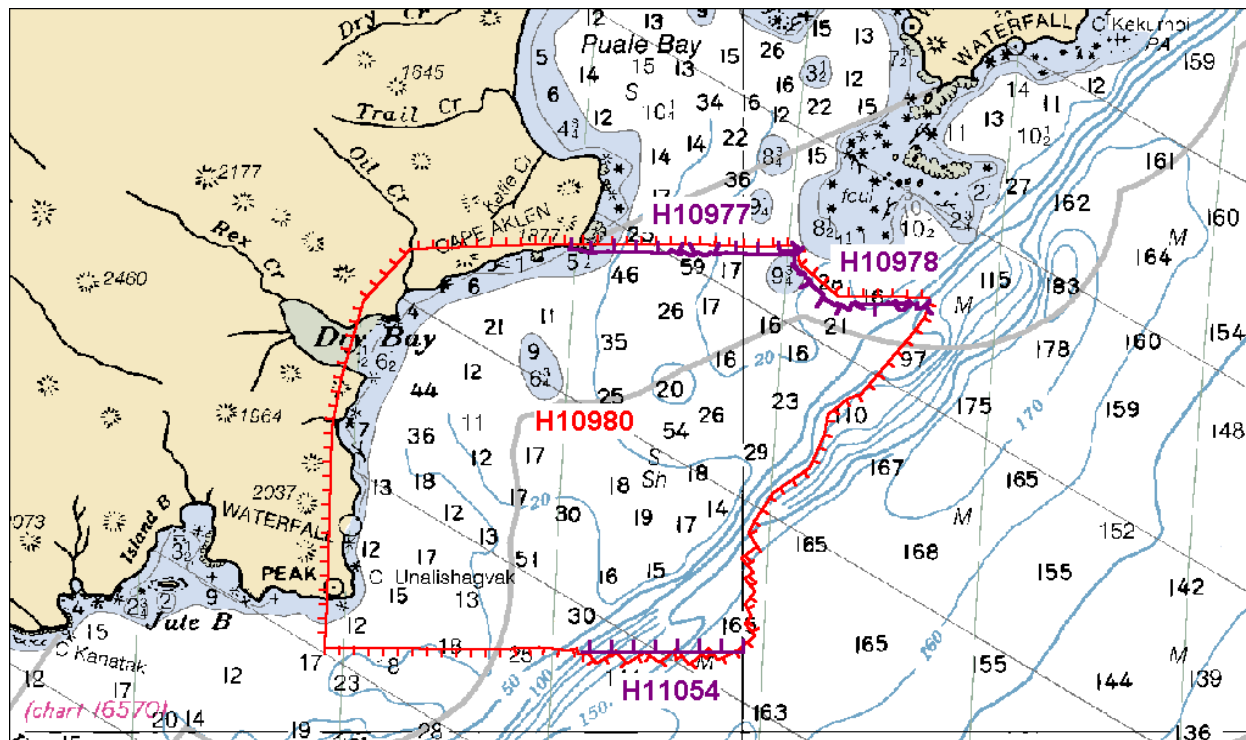


Figure 2. H10980 Junction Surveys.

Data Quality Factors

In subset cleaning, a navigation time latency of unknown origin was observed on DN 153 and DN 156 of multibeam data from RA-3 (VN 2123). This navigational latency appeared as “shifts” over prominent features on adjacent SWMB lines. To correct for these errors, a navigation time latency corrector was calculated and entered into the appropriate Vessel Configuration Files (VCFs) for each day and time the latency value appeared to have changed. All affected data were again corrected for SVP, and merged, in HDCS following the changes to the VCFs. The VCFs are included with the digital data. These data have also been forwarded to NOAA’s Hydrographic Systems and Technology Programs (HSTP), N/CS11 for analysis of this behavior.¹¹

Data from vessel 2124 on DN 154 was found to have “stuck” pitch sensor data, resulting in erroneous corrected sounding data. The analog pitch values used by the Elac/SeaBeam system remained constant and did not change with the attitude of the survey vessels (refer to the *OPR-P164-RA-01 Data Acquisition and Processing Report* for a detailed description of the operation of the Elac/SeaBeam 1180 SWMB system). Because the digital pitch and heave data were also logged for these systems, RAINIER personnel were able to replace the faulty analog data with the digital data in HDCS data structure. During this process, the Hydrographer also noticed a reversed polarity (sign) of the analog heave data and was able to replace it with the digital heave data. Once corrected with the digital attitude data, the soundings were compared with adjacent survey lines and crosslines and found to be of acceptable quality.¹² The submitted HDCS data for this day and vessel includes the digital pitch and heave data in lieu of the usual analog data.

In several areas near shore 10 meters and shoaler, thick kelp often obscured the detection of the bottom. On the VBES fathograms, acoustic returns from kelp usually appeared as a faint trace clearly separated from the bottom, which had a darker, more definitive trace. In these cases, the VBES digital data were edited as necessary to reflect the true bottom. In the SWMB data, removal of soundings obtained over kelp was not always possible in HDCS SwathEdit, as there was no definitive way to determine if a sounding was on a feature, such as a rock, or on kelp. In HDCS Subset Mode, in some instances, it was possible to discern the true bottom, as kelp often appeared as soundings “disconnected” from the continuous bottom. In these instances soundings over kelp were rejected. However, when unable to clearly distinguish between the bottom and kelp, the kelp was not rejected. Areas with kelp were noted by the Hydrographer during shoreline verification and are also indicated in the “H10980_Shoreline_Notes” and “H10980_Shoreline_Updates” tables of the Detached Position and Bottom Sample Plot.¹³

Small errors in the data due to the measurement and application of sound velocity were apparent in the data during subset processing. This was exhibited as “smiles” and “frowns” across multibeam swaths. To attempt to correct these errors, sound velocity corrector profiles were often applied based on the geographic position of the cast, rather than the time the cast was collected. Such application was performed on a line-by-line basis, and only on individual lines that exhibited profound sound velocity errors. Despite the best efforts of the Hydrographer to conduct sufficient sound velocity casts distributed both spatially and temporally, and to correct for sound velocity errors in post processing through methods previously mentioned, small sound velocity errors were still noticeable in several regions. To compensate, the Hydrographer, where possible, reduced the outer beam filter to 55° off nadir to reject soundings obviously in error. The Hydrographer believes, through manual examination of the data, that the remaining errors are negligible and the data still meet depth accuracy standards set forth in the HSSDM.¹⁴

A slight roll artifact was observed from RA-6 on DN 158. The seas during data acquisition ranged up to 1.3 meters (4 feet). The Hydrographer does not believe the degree of roll is large enough in magnitude to affect the quality of data.¹⁵

Vertical differences between adjacent SWMB lines of up to one meter were apparent in some instances during HDCS subset mode processing. The Hydrographer believes this error is tide-related. With the application of smooth tides, this error has been eliminated in most areas; however, some areas remain with a difference of up to 0.2 meters.¹⁶

No other unusual conditions were encountered during the survey that affected the expected accuracy and quality of survey data.¹⁷

B3. Data Reduction

Data reduction procedures for survey H10980 conform to those detailed in the *OPR-P164-RA-01 Data Acquisition and Processing Report*.

C. VERTICAL AND HORIZONTAL CONTROL

A complete description of vertical and horizontal control for survey H10980 can be found in the *OPR-P164-RA-01 Horizontal and Vertical Control Report*, submitted under separate cover. A summary of horizontal and vertical control for this survey follows.

Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Kodiak Island (313 kHz), Kenai (310 kHz), and Cold Bay (289 kHz) were utilized during this survey. Launch-to-launch DGPS performance checks were performed weekly in accordance with Section 3.2 of the FPM. Copies of the performance checks are included in the *OPR-P164-RA-01 Horizontal and Vertical Control Report*.

Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) primary tide station at Kodiak, AK (945-7292) served as control for datum determination. The tertiary tide station at Puale Bay, AK (945-8209) was the primary source for water level reducers for survey H10980.

All data were reduced to MLLW using final approved (smooth) tide correctors and zoning obtained from N/OPS1.¹⁸ Elevations have not been corrected to MHW where appropriate. The Hydrographer recommends that the Pacific Hydrographic Branch (PHB) correct all elevations to MHW, including reclassification of features, as necessary. Copies of the request for smooth tides, and Final Tide Note, are included in this report.¹⁹

D. RESULTS AND RECOMMENDATIONS

D.1 Automated Wreck and Obstruction Information System (AWOIS) Investigations

No AWOIS items were located within the limits of H10980.²⁰

D.2 Chart Comparison²¹

Survey H10980 was compared with chart 16575 (1st Ed.; April 15, 1989, 1:80,000).

Depths from survey H10980 were generally one to two fathoms, with occasional differences of up to four fathoms, shoaler than depths on chart 16575 and one fathom or less on chart 16580. In many instances, this survey found shoaler soundings between charted soundings even though agreement at the position of the charted depth was good. This can be attributed to increased bottom coverage using SWMB methods.²²

In the vicinity of a charted (16575) 25-fathom sounding at 57°38'21.375"N 155°24'03.841"W (356668.3 E, 6391087.6 N), the present survey revealed a depth of 50 fathoms.²³ This area was covered by 100% SWMB. The Hydrographer believes this sounding is charted erroneously as it is inconsistent with the surrounding contours. Survey soundings and contours are consistent with charted contours in this area.²⁴

The waterfall landmark charted at 57°34'06.948"N, 155°44'07.749"W (336394.0 E, 6383979.7 N) was verified from seaward.²⁵

The Hydrographer has determined that data accuracy standards and bottom coverage requirements have been met and survey data are adequate to supersede charted data in their common areas.²⁶

Final sounding comparisons will be made at the Pacific Hydrographic Branch.²⁷

D.3 Shoreline

N/NGS3 supplied photogrammetric shoreline data in raster format for TP-00625 and TP-00628 for use as source shoreline. The TP-sheet (TS) raster images were registered and digitized in MapInfo by RAINIER personnel and the resultant vector data were used in Hypack for field verification. In addition, features shown on the current edition of chart 16575 that were not depicted on any shoreline source document were digitized in MapInfo by RAINIER personnel and displayed in Hypack for field verification. In instances in which charted features were digitized, RAINIER personnel attempted to identify the source of the feature by reviewing prior surveys, although in many instances the quality of the images were poor and RAINIER was unable to register them in MapInfo.

Method of Shoreline Verification

Shoreline verification was conducted near predicted low water in accordance with the Standing Project Instructions and FPM 6.1 and 6.2. For this survey, the general limit of safe navigation of a survey launch was five to two hundred meters offshore of the apparent mean lower-water line. Water depths along this limit of safe navigation were approximately four meters at Mean Lower-Low Water (MLLW). Features inshore of this limit unreachable by survey launch are depicted on the Detached Position and Bottom Sample Plot²⁸ as the Hydrographer's approximate representation of the shoreline.

Detached positions (DPs) taken during shoreline verification were recorded in Hypack and on DP forms, and processed in HPS. These indicate revisions to features, and features not found on the TP-sheet or chart. In addition, hard copies of TP-sheets and compiled digitized data (boat sheets) were taken into the field and annotated by hand to reflect verification of source features and updates to both the chart and TP-sheet. DP forms are included in Section I of the *Separates to be Included With the Survey Data*.²⁹

A detailed Detached Position and Bottom Sample Plot (DP and BS plot), in both paper copy and MapInfo format, is provided showing all detached positions and bottom samples with notes relating to each feature. The updated shoreline and features are also depicted on the final sounding plot.

Verified TP-sheet shoreline that did not require revision is in the MapInfo table "H10980_Shoreline." New features, changes to the shoreline, and features verified from applicable TP-Sheets are depicted in the MapInfo table "H10980_Shoreline_Updates."³⁰

The features found during this survey generally matched those of the source and charted shoreline. The TP-sheet shoreline was found to be very accurate in its depiction of low and high water features, requiring little revision. In many cases the MLLW line on the TP-sheet was found to actually be reefs or ledges, and the changes are reflected on the DP and BS Plots, and in the MapInfo table "H10980_Shoreline_Updates."³¹

Source Shoreline Changes and New Features

Several changes and new features were found and are depicted on the final Detached Position Plot. TP-sheet and charted rocks were often identified as high points or extents of ledges, reefs, and foul limits.³²

The TS rock at 57°32'33.165"N, 155°44'07.212"W (336286.0 E, 6381080.7 N, Pos. # 51279) was disproved after conducting a ten-minute visual and echo sounder search within a 55-meter search radius. Water visibility in this area was clear to a depth of three meters. The Hydrographer does not recommend charting this rock.³³

The TS foul area limit³⁴ south of Dry Bay was modified by the Hydrographer. The limit was extended south by approximately 900 meters. The shoreline buffer line and the extents of VBES data in this area defined the foul limit. The Hydrographer recommends charting the foul limit as depicted on the Detached Position and Bottom Sample Plot.³⁵

A new foul area was delineated at 57°32'51.5"N, 155°43'51.03"W (336577.8 E, 6381636.5 N). The shoreline buffer line and the extents of VBES data in this area defined the foul limit. The area is foul with kelp. The Hydrographer recommends charting the foul limit as depicted on the Detached Position and Bottom Sample Plot.³⁶

A new rock was found at 57°38'30.933"N, 155°41'23.729"W (339441.8 E, 6392030.4 N, Pos. # 50994, 50995). The Hydrographer recommends charting the new rock at surveyed position.³⁷

Charted Features

The charted (16575) rock at 57°38'06.549"N, 155°42'09.518"W (338652.8 E, 6391306.9 N, Pos #51002) was disproved after conducting a five-minute visual and echosounder search within a 60-meter radius. Water visibility in this area was clear to a depth of three meters. The rock was also covered with 100% SWMB. However, a new rock was found approximately 150 meters inshore at 57°38'06.126"N, 155°42'19.578"W (338485.5 E, 6391300.5 N, Pos #21286), and a TS rock was verified 140 meters northwest. The Hydrographer recommends removing the charted rock and charting the rocks based on the present survey.³⁸

The charted (16575) rock at 57°38'01.435"N, 155°42'36.824"W (338193.8 E, 6391166.9 N, Pos #51012) was disproved after conducting a five-minute visual and echosounder search within a 40-meter radius. Water visibility in this area was clear to a depth of three meters. However, a ledge was positioned approximately 80 meters north at 57°38'03.869"N, 155°42'36.619"W (338200.2 E, 6391242.0 N, Pos #21287). The Hydrographer recommends removing this rock from the chart and depicting the ledge as shown on the DP and BS Plot.³⁹

The charted (16575) rock at 57°34'01.902"N, 155°43'55.250"W (336595.3 E, 6383815.4 N, Pos #51197) was disproved after conducting a ten-minute visual and echosounder search within a 50-meter radius in water with two to three meter visibility. However, two TS rocks were verified approximately 100 meters north at 57°34'05.103"N, 155°43'54.575"W (336610.5 E, 6383913.9 N, Pos #51196), and 110 meters northwest at 57°34'04.62"N, 155°43'59.81"W (336523.0 E, 6383902.4 N). The Hydrographer recommends removing the charted rock and charting the TS rocks as shown on the Detached Position and Bottom Sample Plot.⁴⁰

The charted (16575) rock at 57°33'30.543"N, 155°44'03.128"W (336425.4 E, 6382851.4 N, Pos #51288) was disproved after conducting a five-minute visual and echosounder search within a 35-meter search radius. Water visibility in this area was clear to a depth of three meters. However, a TS rock was verified approximately 100 meters southwest. The Hydrographer recommends removing the charted rock and charting the TS rock as depicted on the Detached Position and Bottom Sample Plot.⁴¹

The charted (16575) rock at 57°32'39.023"N, 155°43'45.836"W (336648.6 E, 6381247.4 N, Pos #51290) was disproved after conducting a five-minute visual and echosounder search within a 25-meter search radius in water with two to three meter visibility. However, a ledge was positioned approximately 50 meters inshore. The Hydrographer recommends removing this rock from the chart and depicting the ledge as shown on the Detached Position and Bottom Sample Plot.⁴²

The TS/charted (16575) rock at 57°32'31.68"N, 155°43'59.61"W (336410.5 E, 6381029.7 N, Pos #51280) was verified during shoreline verification and partially covered with SWMB. The least depth obtained from SWMB was 1.1 fathoms; however the least depth obtained during shoreline verification was 0.2 fathoms (0.5 meters, Pos #51280). The Hydrographer recommends revising the charted least depth of the rock based on the present survey.⁴³

Recommendations

The Hydrographer recommends that the shoreline as depicted on the Detached Position and Bottom Sample Plot and final sounding plot supersede and complement shoreline information compiled on the TP-Sheets and charts as noted.⁴⁴ These revisions are recorded in the MapInfo digital files named "H10980_Shoreline" and "H10980_ShorelineUpdates". In addition, field notes made by the Hydrographer, including verification of source features and descriptions of shoreline classification, are submitted in the digital MapInfo file "H10980_ShorelineNotes."

D.4 Dangers to Navigation

Five dangers to navigation were found and reported to the Pacific Hydrographic Branch for verification and final submission to the Seventeenth Coast Guard District on December 17, 2001. A copy of the preliminary Danger to Navigation Report is included in this report. A copy of the final report will be inserted by PHB following verification and submission to the U.S Coast Guard.⁴⁵

D.5 Aids to Navigation

No aids to navigation (ATONs) were located within the limits of H10980.⁴⁶

D.6 Miscellaneous

Bottom samples were collected and are depicted on the Detached Position and Bottom Sample Plot.⁴⁷

E. APPROVAL

As Chief of Party, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Hydrographic Manual, Fourth Edition, Hydrographic Survey Guidelines, Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for 2001.

The digital data and supporting records have been reviewed by me, are considered complete and adequate for charting purposes, and are approved. All records are forwarded for final review and processing to N/CS34, Pacific Hydrographic Branch.

Survey H10980 is complete and adequate to supersede charted soundings in their common areas. No additional work is required for this survey.⁴⁸


Listed below are supplemental reports submitted separately that contain additional information relevant to this survey:

TitleDate SentOffice

Data Acquisition and Processing Report for OPR-P164-RA-01
Horizontal and Vertical Control Report for OPR-P164-RA-01
Tides and Water Levels Package for OPR-P164-RA-01
Coast Pilot Report for OPR-P164-RA-01

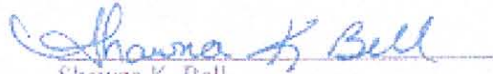
14 December, 2001 N/CS34
14 December, 2001 N/CS34
16 July, 2001 N/OPS1
TBD N/CS26

Approved and Forwarded:

 12-20-01
James C. Gardner
Captain, NOAA
Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Sheet Manager:


Shawna K. Bell
Ensign, NOAA

Field Operations Officer:


Edward J. Van Den Ameele
Lieutenant, NOAA

AWOIS/ SURF
6/17/04 mck

Revisions Compiled During Office Processing and Certification

¹ Concur

² PHB Revision – The bottom consists mainly of shells with additional components of stones and pebbles. Depths within the survey area range from 0 to 170 fathoms.

³ Concur

⁴ oncur

⁵ PHB Revision - Filed with hydrographic data.

⁶ PHB Revision - The junctions with H10977 and H10183 were not formally completed since these surveys were processed previously. A comparison of soundings between the surveys generally reveals good agreement. Depth curves on the present survey have been drawn in consideration of depths depicted on the adjoining surveys. An “Adjoins” note has been added to the smooth sheet.

The junction with surveys H-10978 and H11054 are complete. A “Joins” note has been added to the smooth sheet where applicable. Agreement is generally good between these junctional surveys and H10980. Some soundings from H10978 have been transferred within the common area to better delineate the bottom configuration and to support depth curves common to both surveys.

⁷ PHB Revision - Add survey H10183 1:10,000 1985 Southwest

⁸ Concur

⁹ Concur

¹⁰ Concur

¹¹ PHB Revision – Concur, the sounding data from vessel 2123 was reviewed and found to be consistent with surrounding soundings from other vessels and within specifications stated in the Field Procedures Manual and the Specifications and Deliverables, June 2000. No results from N/CS11 testing or troubleshooting have been forward to PHB.

¹² Concur

¹³ PHB Revision - See smooth sheet for foul and kelp areas.

¹⁴ Concur

¹⁵ Concur

¹⁶PHB Revision - With the application of smooth tides, the differences in these areas were not significant and do not affect the overall data quality.

¹⁷ Concur

¹⁸ PHB Revision – Approved tides were supplied to the hydrographer by the Pacific Hydrographic Branch.

¹⁹ PHB Revision – The copies for smooth tide requests are filed with the hydrographic data. The approved Tide Note dated October 26, 2001 is attached to this report.

²⁰ Concur

²¹ PHB Revision -

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Datum</u>
H-7194	1947	1:20,000	NAD27
H-7195	1947	1:20,000	NAD27
H-7196	1947	1:40,000	NAD27

Digital versions of prior surveys were used for making comparisons with the current survey. The legibility of the prior survey digital image files for these prior surveys is considered fair to good; in some areas the files are illegible.

Prior surveys H-7194, H-7195 and H-7196 are the source of most all charted soundings and features within the common area of the present survey. Additional charted items originate from dangers to navigation as submitted by the hydrographer. Sounding agreement between these priors and the current survey is good. Additional information is found in the hydrographer's report, section D.2.

A more thorough coverage of the area utilizing the shallow water multibeam (SWMB) system, supplemented by single beam echo sounding system, was accomplished during this survey. This recent survey has provided a better portrayal of the bottom revealing new shoals information not found in 1947.

Survey H-10980 is adequate to supersede all prior surveys within the area of common coverage.

The application of this survey to charts of a scale less than 1:40,000 may require the generalization of features such as ledges and reefs. The recommended charting disposition of specific ledges or reefs is their depiction as isolated rocks. The application of this survey to charts of a scale greater than 1:40,000 may be accomplished without generalization of features. Features from survey H-10980 have been generalized on chart 16575 along the high water line where applicable.

²² Concur

²³ PHB Revision – Concur with clarification. Present survey depths range from 38 – 50 fathoms

²⁴ PHB Revision – Concur. The charted 25 fathom sounding appears as a 45 fathom depth on the prior survey. The evaluator believes the 45 fathom depth was compiled in error to the chart.

²⁵ Concur

²⁶ Concur

²⁷ Concur

²⁸ PHB Revision-Filed with the hydrographic data.

²⁹ PHB Revision – Filed with the hydrographic data

³⁰ Concur

³¹ PHB Revision – Concur, shoreline manuscript features, updated features and revisions to features are reflected on the smooth sheet.

³² Concur

-
- ³³ PHB Revision – Concur. Chart this area based on the present survey information.
- ³⁴ PHB Revision - at latitude 57/36/49.61N, longitude 155/43/33.85W
- ³⁵ PHB Revision – Concur with clarification. due to the scale of the chart, a foul limit line could not be drawn.
- ³⁶ PHB Revision –Concur with clarification, due to the scale of the chart a foul limit line could not be drawn.
- ³⁷ Concur
- ³⁸ Concur
- ³⁹ PHB Revision – Concur, with clarification. Chart ledge as rock based on chart scale.
- ⁴⁰ PHB Revision – Concur, with clarification. Chart one rock based on chart scale.
- ⁴¹ PHB Revision – Concur. Chart rock awash at latitude 57/33/27.78N, longitude 155/44/6.07W.
- ⁴² PHB Revision – Concur with clarification. Chart ledge centered at latitude 57/32/38.11N, longitude 155/43/49.01W and as shown on smooth sheet.
- ⁴³ PHB Revision – Concur with clarification. Chart rock covered 2 feet, at latitude 57/32/31.59N, longitude 155/43/59.55W based on the application of approved (smooth) tides.
- ⁴⁴ PHB Revision – Concur with clarification. Shoreline verification data has been analyzed during office processing and shown on the smooth sheet as warranted. Portrayal of charted information should be as shown from the smooth sheet.
- ⁴⁵ PHB Revision - No additional dangers to navigation were found during office processing.
- ⁴⁶ PHB Revision- Concur
- ⁴⁷ PHB Revision – Bottom samples have been depicted on the smooth sheet based on the hydrographer's information.
- ⁴⁸ PHB Revision - Concur

Hydrographic Survey Registry Number: H10980

Survey Title: State: Alaska
Locality: Shelikof Strait
Sub-locality: Cape Aklek to Cape Unalishagvak

Project Number: OPR-P164-RA-01

Survey Dates: May-July 2001

Depths are reduced to Mean Lower Low Water using final approved (smooth) tides.
Positions are based on the NAD83 horizontal datum.

CHARTS AFFECTED:

Chart	Scale	Edition	Date
16575	1:80,000	1 st	4/15/89
16580	1:350,000	11 th	8/18/01

DANGERS:

Feature	Depth(fathoms, feet)	Latitude	Longitude
Rock	0 ₂	57°38'31.039"N	155°41'21.299"W
Sounding	9 ₂	57°39'18.854"N	155°28'02.143"W
Sounding	9 ₄	57°35'33.625"N	155°39'28.336"W
Sounding	10 ₃	57°34'19.002"N	155°42'32.418"W
Sounding	10 ₅	57°37'34.006"N	155°35'19.877"W

COMMENTS:

Questions concerning this report should be directed to the Chief, Pacific Hydrographic Branch at (206) 526-6836.

This graphic may not be up to date
with the latest Local Notices to Mariners
information. Do not paste on to NOAA charts.

Advance information subject to office review.

CAPE AKLEK

Rock

ADVANCE
INFORMATION

Chart 16575

1st Ed. Apr. 15, 1989

Scale Depicted 1:60,000

Revisions from NOAA hydrographic

survey H10980

Depths in fathoms and feet at MLLW

Pacific Hydrographic Branch

7600 Sand Point Way N.E.

Seattle, WA 98115

(206) 526-6836

(see note B)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: October 26, 2001

HYDROGRAPHIC BRANCH: Pacific

HYDROGRAPHIC PROJECT: OPR-P164-RA-2001

HYDROGRAPHIC SHEET: H10980

LOCALITY: Shelikof Strait, AK

TIME PERIOD: May 21 - July 8, 2001

TIDE STATION USED: 945-8209 Puale Bay, AK

Lat. 57° 42.5'N Lon. 155° 23.6'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.504 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: SS47, SS48, SS49, SS50 & SS53.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time.

For [Signature]

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION



Printed on Recycled Paper



Final Preliminary Zoning for OPR-P164-R-2001
Shelikof Strait, AK - Sheet H10980

The chart displays the following features and annotations:

- Waterfalls:** WATERFALL C Kekurnoi, WATERFALL D, WATERFALL E, WATERFALL F, WATERFALL G, WATERFALL H, WATERFALL I, WATERFALL J, WATERFALL K, WATERFALL L, WATERFALL M, WATERFALL N, WATERFALL O, WATERFALL P, WATERFALL Q, WATERFALL R, WATERFALL S, WATERFALL T, WATERFALL U, WATERFALL V, WATERFALL W, WATERFALL X, WATERFALL Y, WATERFALL Z.
- Peaks:** PEAK A, PEAK B, PEAK C, PEAK D, PEAK E, PEAK F, PEAK G, PEAK H, PEAK I, PEAK J, PEAK K, PEAK L, PEAK M, PEAK N, PEAK O, PEAK P, PEAK Q, PEAK R, PEAK S, PEAK T, PEAK U, PEAK V, PEAK W, PEAK X, PEAK Y, PEAK Z.
- Soundings and Corrections:**
 - SS48: Time Corrector 0 mins, Range Corrector x1.00, Reference 945-8209
 - SS49: Time Corrector 0 mins, Range Corrector x0.98, Reference 945-8209
 - SS50: Time Corrector -6 mins, Range Corrector x0.98, Reference 945-8209
 - SS53: Time Corrector -6 mins, Range Corrector x0.96, Reference 945-8209
- Other Features:** Cape Kater, Cape Kater Cr., Cape Kater Pt., Cape Kater R., Cape Kater S., Cape Kater T, Cape Kater U, Cape Kater V, Cape Kater W, Cape Kater X, Cape Kater Y, Cape Kater Z, Cape Kater A, Cape Kater B, Cape Kater C, Cape Kater D, Cape Kater E, Cape Kater F, Cape Kater G, Cape Kater H, Cape Kater I, Cape Kater J, Cape Kater K, Cape Kater L, Cape Kater M, Cape Kater N, Cape Kater O, Cape Kater P, Cape Kater Q, Cape Kater R, Cape Kater S, Cape Kater T, Cape Kater U, Cape Kater V, Cape Kater W, Cape Kater X, Cape Kater Y, Cape Kater Z.

Time Corrector -6 mins
Range Corrector x0.98
Reference 945-8209

Time Corrector -6 mins
Range Corrector x0.96
Reference 945-8209

~~(chart 16.570)~~

Final tide zone node point locations for **OPR-P164-RA-2001,**
Sheet H10980.

Format: Tide Station (in recommended order of use)
Average Time Correction (in minutes)
Range Correction
Longitude in decimal degrees (negative value denotes
Longitude West),
Latitude in decimal degrees

	Tide Station Order	AVG Time Correction	Range Correction
Zone SS47	945-8209	0	1.00
-154.885034 57.546648			
-155.146674 57.654785			
-155.323879 57.730761			
-155.393552 57.725278			
-155.562792 57.647953			
-155.336279 57.572524			
-155.041599 57.475564			
-155.006871 57.49286			
-154.885034 57.546648			
Zone SS48	945-8209	0	1.00
-155.388545 57.740625			
-155.447786 57.792143			
-155.62403 57.823666			
-155.671983 57.68032			
-155.562792 57.647953			
-155.393552 57.725278			
-155.388545 57.740625			
Zone SS49	945-8209	0	0.98
-155.562792 57.647953			
-155.611179 57.624242			
-155.74879 57.545654			
-155.77949 57.61008			
-155.808242 57.673989			
-155.671983 57.68032			
-155.562792 57.647953			
Zone SS50	945-8209	-6	0.98
-155.041599 57.475564			

-155.336279 57.572524
-155.562792 57.647953
-155.611179 57.624242
-155.74879 57.545654
-155.517776 57.473753
-155.198438 57.382434
-155.12588 57.434875
-155.041599 57.475564

Zone SS53

945-8209

-6

0.96

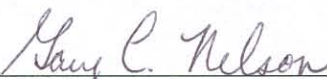
-155.198438 57.382434
-155.517776 57.473753
-155.74879 57.545654
-155.915372 57.474028
-155.965446 57.448676
-155.769279 57.423136
-155.590052 57.385333
-155.288047 57.312186
-155.232725 57.357623
-155.198438 57.382434

NOAA FORM 77-27(H) (9-83)		U.S. DEPARTMENT OF COMMERCE		REGISTRY NUMBER	
HYDROGRAPHIC SURVEY STATISTICS					
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.					
RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET			SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT			FIELD SHEETS AND OTHER OVERLAYS		
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS
ACCORDION FILES					
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					
SHORELINE DATA					
SHORELINE MAPS (List):					
PHOTOBATHYMETRIC MAPS (List):					
NOTES TO THE HYDROGRAPHER (List):					
SPECIAL REPORTS (List):					
NAUTICAL CHARTS (List):					
OFFICE PROCESSING ACTIVITIES					
The following statistics will be submitted with the cartographer's report on the survey					
PROCESSING ACTIVITY			AMOUNTS		
			VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET					
POSITIONS REVISED					
SOUNDINGS REVISED					
CONTROL STATIONS REVISED					
			TIME-HOURS		
			VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION					
VERIFICATION OF CONTROL					
VERIFICATION OF POSITIONS					
VERIFICATION OF SOUNDINGS					
VERIFICATION OF JUNCTIONS					
APPLICATION OF PHOTOBATHYMETRY					
SHORELINE APPLICATION/VERIFICATION					
COMPILATION OF SMOOTH SHEET					
COMPARISON WITH PRIOR SURVEYS AND CHARTS					
EVALUATION OF SIDE SCAN SONAR RECORDS					
EVALUATION OF WIRE DRAGS AND SWEEPS					
EVALUATION REPORT					
GEOGRAPHIC NAMES					
OTHER (Chart Compilation)					
USE OTHER SIDE OF FORM FOR REMARKS		TOTALS			
Pre-processing Examination by			Beginning Date		Ending Date
Verification of Field Data by			Time (Hours)		Ending Date
Verification Check by			Time (Hours)		Ending Date
Evaluation and Analysis by			Time (Hours)		Ending Date
Inspection by			Time (Hours)		Ending Date

APPROVAL SHEET
H10980

Initial Approvals:

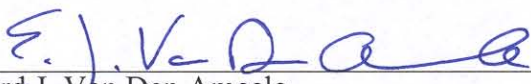
The survey and associated records have been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The survey records and digital data comply with NOS requirements except where noted in the Descriptive Report and are adequate to supersede prior surveys and nautical charts in the common area.



Gary Nelson
Chief, Cartographic Team
Pacific Hydrographic Branch

Date: 2/19/2004

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Descriptive Report.



Edward J. Van Den Ameele
LT, NOAA
Chief, Pacific Hydrographic Branch

Date: 4/15/2004

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10980

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED